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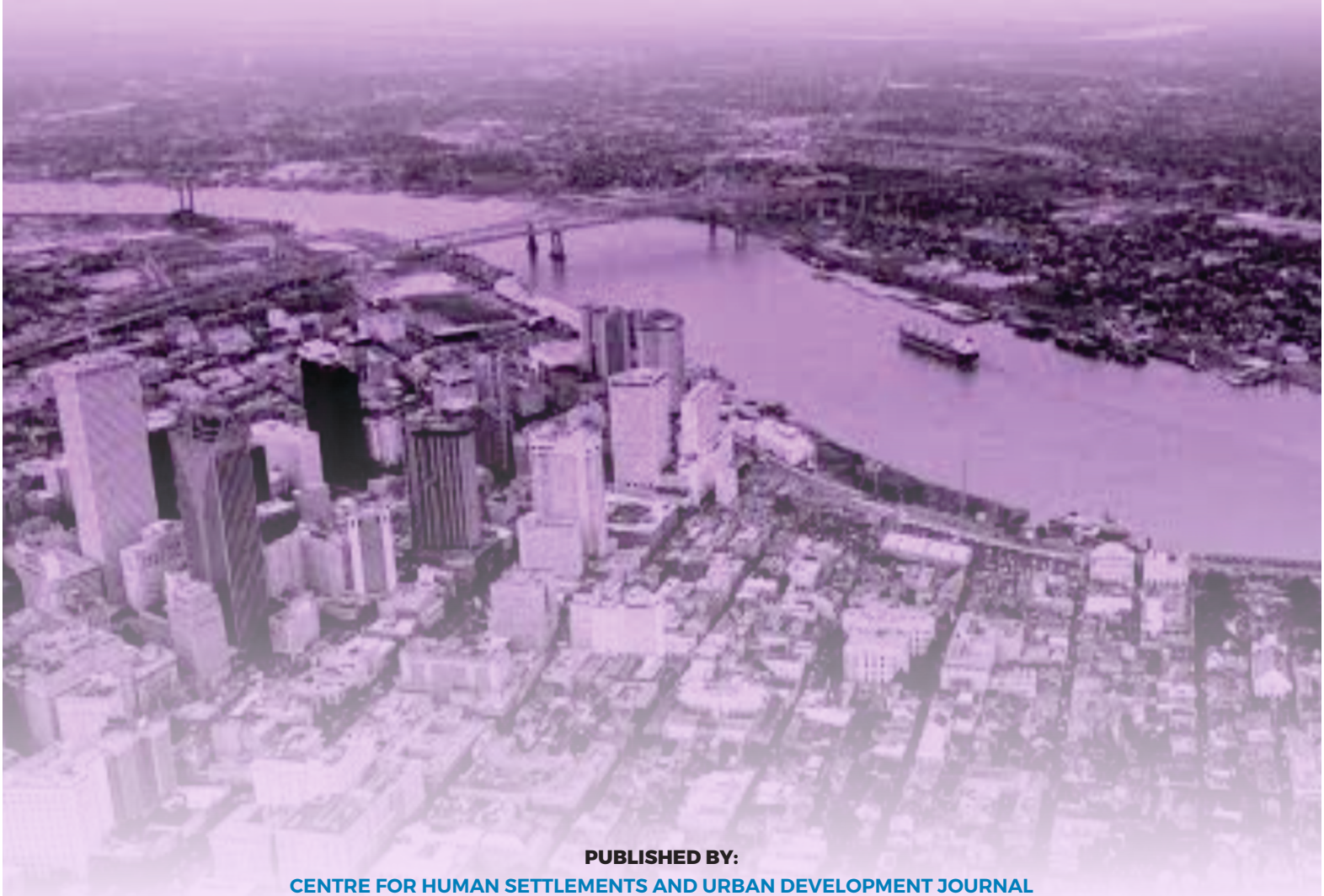

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Editorial Committee

EDITORIAL REMARKS

Dear Reader,

This year the Centre for Human Settlements & Urban Development (CHSUD) will mark her 20th anniversary. This edition of her journal is intended as a prelude to launching of the Anniversary Edition tagged "Managing Human Settlements in the Urban Century". This will highlight the requisites of having and keeping cities, towns and all forms of human settlements as humanity finally moved into the age where urbanization and urban activities, for the first time in history, dominates the planet. The special call for a focus on urbanization is further hinged on the fact that besides dominating human settlement types, urban related human activities have had the greatest impact on earth and its environment. This has resulted into a phenomenon now referred to as "The Anthropocene" – an interconnected, complex global systems in which humanity's impact has become clear.

This volume nine and particular edition (number one) feature works that explored elements and scenarios that increasingly dominates African cities today. Many of them exhibiting lack lustre state of bourgeoning cities and towns in sub-Saharan Africa. But shown here exhibiting the different efforts being made towards having sustainable living and livelihood. This is evident from widespread poverty and deprivations highlighted by "*Implications of Spatial Variation of Household Poverty Incidence in Neighbourhoods of Minna, Nigeria"*, to the explorations of the limitations of interventions shown by *"Climate Change Mitigation Paradox: Poverty and Greenhouse Gas Reduction in A Global South City"*. The different negative effects of increasing human activities on the natural and social environment enumerated by "*Spatio-Temporal Analysis of Land Use and Land Cover Change of Birnin Kebbi for Sustainable Development"*, and, "*Reduction in the Effects of Climate Change: Efforts Towards Safeguarding the Built Environment in Kaduna, Nigeria";* have drawn attention to the dimensions and consequences, at local, national and regional levels, the increasing effects of human activities dominated earth and arguably the planetary system.

Dr Aliyu M. Kawu MNITP, RTP, MeRSA
Editor-in-Chief
CHSUD Journal

Papers for Journal

The journal accepts well researched papers, including case studies, from all disciplines in Environmental Sciences and other disciplines or subject areas related to the built environment. However, papers to be considered for a specific volume of the journal should fall within the theme and sub-themes specified. The theme for each volume of the journal will be specified.

Submission of Papers

All manuscripts should be submitted to the editor, CHSUD Journal. Three hard copies of papers should be forwarded to the editor with a letter of undertaking that the work is not under consideration elsewhere and it will not be sent to another journal until final decision has been made on it.

Electronic Version: In addition to three hard copies, an electronic version of the article should be forwarded to CHSUD e-mail.

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OVERVIEW OF CHALLENGES OF QUALITY MANAGEMENT IMPLEMENTATION IN CONSTRUCTION FIRMS IN ABUJA, NIGERIA

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Abstract
Quality Management (QM) is one of the techniques used by construction industry to improve financial performance, higher customer satisfaction, and higher product quality. However, certain factors which include structural and contextual challenges hinder the effective implementation of QM in developing nations such as in the Nigerian construction industry. This study aims to assess the strategies for effective implementation of QM practice in Nigeria construction projects by investigating the extent of QM implemented in Nigerian construction sector, explored the challenges faced in its implementation process and proposed for strategies that can be adopted for its effective implementation. To achieve the objectives of the study, a survey research design was adopted for data collection, where questionnaire was the main instrument used for data collection in the survey research design. A total of 370 questionnaires were administered to staff of targeted10 small and medium construction firms, out of which 137 questionnaires were returned. The data obtained in the questionnaire study was analyzed using descriptive statistics; means score and Relative Importance Index (RII). While the one obtained in the interview exercise was analyzed through content analysis. The findings revealed that there is partial implementation of QM in all the selected construction firms in projects execution. Lack of commitment of management toward the implementation, misinterpretation for QM requirements by staff is some of the challenges faced by the firms in QM implementation. Some of the techniques that can be used for effective QM implementation in the construction projects are provision of resources for QM implementation, ensuring procedures for suitable standard of quality services, frequent site monitoring and efficient communication link between the various departments of the construction firms. The study thereby recommended that stakeholders in construction industry should be enlighten on importance of effective implementation of QM in all section of construction project execution, training and retraining of professionals and staff in the construction industries for effective implementation of QM in all section of construction project execution.
Keyword*:* Framework, Quality Management, Construction, Implementation, Man-power.

Introduction

The relevance of construction industry to economy condition of many nations in the world cannot be over emphasized (Onungwa, 2017). The industry plays vital roles in providing shelter and infrastructure development in the developed and developing nations (Onungwa, 2017). Despite the benefits of construction industry advocated in the literature, the industry is characterized with high incidence of poor project delivery due to lack of or inadequate techniques for implementation of QM in projects execution (Wasiu *et al*., 2012). The literature indicates that QM implementation in the execution of construction projects have been a problem over the years specifically in the developing nations such as Nigeria. The American Society of Quality (ASQ) defines quality as the characteristics of a product or service that bear on its ability to satisfy stated or implied needs and also a product or service free of deficiencies. This implies that a quality project is not a coincidence but also an essential ingredient put in place to meet stipulated standards to ensure not only its aesthetics but also their appropriateness for intended uses including structural stability, safety and life span of finished products (Leong *et al.*, 2014; Okuntade, 2015). According to Irani *et al*. (2004), within the service and manufacture industries, implementation of QM by many highly competitive organizations worldwide has improved performance and productivity in the industry. Hendricks *et al.* (2001) observed that QM adoption has become vital strategy within

an organization to improve financial performance, higher customer satisfaction, and higher product quality. Okuntade (2015) opined that effective implementation of QM will improved company moral, spirit of teamwork, ability to discover potential failures before they turn into disaster and also will bring about enlightenment and empowerment of subordinates to ease communication with organization leadership. For an organization to have a continuous participation of all the quality improvement process, it requires a total change in organization culture and shifting of responsibility to management. This implies that QM is not an easy task (lakhe and Mohanty, 1994). However, most of the developed countries across the globe have been evolved to implement quality standards to ensure construction quality (Mallawaarachchi, 2015).

In developing countries such as Nigeria, the implementation of QM in construction projects has several challenges (Jimoh *et al.*, 2016). For instance, Sylvia (2015) pointed out that in implementing QM in Nigerian construction projects, many of the programmes and operations will not be effective if the regulatory bodies are not willing to implement the positive change in the operation of the country. According to Noor *et al. (*2012), most of the quality personnel appointed are not from construction background and do not fully understand the terminologies used in the system. Mohammed *et al.* (2017) revealed that managerial, organizational, communicational, financial, cultural, educational, and auditing are obstacles hindering the successful implementation of QM in the construction industry. To be precise, the barriers to successful implementation of QM in Nigerian construction industry can be summarized as lack of top management support, difficulties in taking corrective and preventive actions, inadequate knowledge of project, poor material quality and poor quality of professionals and workmanship (Abdulrahim, 2016; Okuntade, 2015). To ensure effective project delivery in Nigerian construction industry, techniques that can be adopted for effective QM implementation in projects execution need to be developed (Jimoh *et al.*, 2016). Therefore, this study intends to contribute to the literature by proposing for effective strategies for successful implementation of QM in Nigerian construction projects.

Literature Review

Extent of quality management practices in the construction sector

As reported by Mane and Patil (2015) Quality is one of the critical factors in the success of construction projects. Quality of construction projects, as well as project success, can be regarded as the fulfilment of expectations of the project participants. Longtau *et al*. (2015) stated that in order to achieve quality in construction, the construction project must be contained as a set of activities that start with the requirements of the customers and end with satisfaction and contentment of the customers. The ISO 9000 series, developed by the International Standards Organisation (ISO) is a standard that is related to implementing better QM, control and assurance in companies (Chini*et* and Valdez 2003), and is already widely accepted in many manufacturing, production and services industries because it focuses on customer focus, leadership, people involvement, process approach, systems approach, continual improvement, and promotes a factual approach to decision making (Turk, 2011). Effectively implementing a QM system requires an ISO 9000 quality management system, or by applying a total QM approach, potentially provides benefits that are needed by any construction company (Tricker, 2013).

Low and Wee (2001), Turk (2011) claimed that by employing an ISO 9000-certified QM system, work repetition, project delays and failure to meet specifications can be minimized. Other advantages are that the buildability factor of most projects can be increased whilst the project cost is decreased because of the use of appropriate framework for controlling the processes required when constructing the project. Ofori *et al*. (2012) pointed out that lessons learned from implementing a QM system ensure that a construction company can be more efficient in its subsequent projects in using material resources, developing better internal communications and increasing productivity as well as improving its standard operating procedures. The primary benefit of operating an effective, appropriate and transparent quality system is that a construction

firm will be admired and chosen to bid in both local and global market contracts (Turk, 2011). This leads to conclusion supporting that a QM system needs to be developed and fully implemented in any construction company that wishes to be a sector leader.

Challenges for effective implementation of QM

1. Mosadeghrad (2014) categorises the challenges experienced during the implementation of quality management into five groups. The five categories are: Structural Challenges: deal with the physical resources and structures present during the implementation of QM and include: inappropriate organisational culture, lack of financial resources, non-existence of information systems and lack of physical resources.
2. Contextual Challenges: arise as a result of the culture of the organisation itself militating against successful QM implementation. For example, poor organisational culture, lack of teamwork, poor and ineffective communication networks, lack of innovation and lack of co-ordination amongst employees Okuntade (2015).
3. Strategic Challenges: are related to organisational leadership that are significant barriers and are a strong impediment to the success of quality management programmes. They include lack of clear vision, poor leadership, lack of support from top management, poor planning, inconsistent objectives and lack of adequate quality management programmes (Tan and Syazwan, 2016).
4. Procedural challenges: arise from the difficulty and complications of the processes themselves exhibited as inadequate process management, lack of customer focus, lack of proper supplier relationship, lack of framework for review and self-evaluation, ineffective corrective procedure and bureaucracy.
5. Human resources are caused by human related factors such as employee resistance to change and lack of employee involvement. They include lack of employee involvement and commitment, employee resistance to change, lack of education and training of employees, lack of employee recognition and rewards, lack of employee motivation and satisfaction and poor human resource management (Pravin and Jalindar 2015).
6. In addition, Qaiser *et al*., (2015), revealed that a number of challenges were faced in implementing QM, these challenges were poor and ineffective leadership, lack of funding and resources, insubordination of workforce, lack of management commitment, poor and ineffective planning.

Strategy for effective implementation of quality management in construction projects

The significant factor in the success of construction project is quality. Usually quality is perceived as 'the quality of final product' but in reality, it brings benefits to construction project, such as reduced waste, saved time, increased profit and reduced occupational health and safety problems (Rumane2011). Hence, most countries have evolved to implement quality standards to ensure construction quality (Mallawaarachchi and Senaratne 2015). The definition of quality for construction projects differs from that of the manufacturing industry because the product is non-repetitive, unique and has specific requirements (Ann and Susan 2016). In construction, quality is essential not only in product and equipment used but the management approach. QM is a continuing process of improvement, involving all aspects of the business aimed at prevent mistakes before they happen with key commitment and teamwork (Pravin and Jalindar 2015). QM will not work without the commitment of the top management in all areas of the company, and must provide employees with the proper training, tools, equipment and work place environment to accomplish the assigned task.

QM is often taken for granted and inadequate attention has been given to this parameter. Subsequently, in the absence of effective quality management procedures, considerable time, and resources are wasted every year (Pravin and Jalindar, 2015). It is very difficult to correct nonconforming work in a construction project, especially if it is at the later phases of the project (Ann and Susan, 2016). This makes QM an essential part of any project as it helps avoid these non-correctable mistakes, working within the scope, within the budget, and meeting the

customers' needs in a timely manner (Rumane, 2011). This is a critical issue that needs to be addressed by all organizations that wish to adopt strategies in overcoming and minimizing problems, Strategies are identified as training, High participation of top management, Internal and external audit, Strict supervision on site, establish feedback system, Frequent steering committee meeting, Team-working approach, involvement of all employee in documentation process and launch quality campaign (Tan and Syazwan, 2016). Having the right human resource capacity positively influences effective implementation of QM in construction which helps to prevent mistakes before they happen. Another important strategy by which QM can be implemented in construction process is adoption of PDCA (Plan Do Check Act) a complete and efficient tool most well-known and used methods for developing strategic planning efficiently in companies.

Research Methodology

In order to achieve the aim of this study, mixed methods research design were adopted by involved the use of both qualitative and quantitative approach of data collection. This implies that in-depth interview and questionnaire were the instruments used to elicit information on the challenges of effective implementation of QM in construction projects. The instruments were also used to find out the strategies that can be adopted for effective implementation of QM in the Nigerian construction industry.

Sample size and Sample Techniques

The targeted population for the study was construction professionals in registered construction firms in Abuja, Nigeria. Therefore, the participants of the study were drawn from registered small and medium construction firms in the study context. Table 1presents the list of the construction firms, their staff strength and the number of participants that were sampled for the study. The numbers (sample size) in each firm were obtained through Krejcie and Morgan (1970) Formula at 95% confidence level. Based on this formula, the total number of questionnaires needed for the study was 370. The 370 were distributed using a random sampling technique. Details of this formula are as follow:

$$\mathbf{s = X^2 NP (1 - P) \div d^2 (N - 1) + X^2 P (1 - P)} \quad (3.1)$$

Where;

s = sample size from finite population
X = based on confidence level 1.96 for 95% confidence level was used for this study
d = Precision desired, expressed as a decimal (i.e. 0.05 for 5% used for this study
P = Estimated variance in Population as a decimal (i.e. 0.5 for this study)
N= total number of population, 10,348 (Krejcie and Morgan, 1970)

$$s = \frac{1.962 \text{ x } 10{,}348 \text{ x } 0.5 \text{ x } (1 - 0.5)}{(0.052 \text{ x } (10{,}348 - 1)) + (1.962 \text{ x } 0.5 \text{ x } (1 - 0.5))}$$

$$= \frac{9938.2192}{(25.867 + 0.9604)}$$

$$= \frac{9938.2192}{(26.8279)} = 370.4062 \approx 370$$

Table 1: Sampled of Small and Medium Sized Construction Firmsin Abuja

No	Variables Tested	Staff Strength	Krejcie and Morgan Formula
A	Fem properties	24	23
B	Archlon Nigeria	45	40
C	Filter Consult Limited	37	34
D	Kelly Shelter	52	46
E	Rock Limited	27	25
F	Anny Hommes	56	49
G	JB Hommes	39	35
H	Fourth Dimension Project Limited (4DPL)	52	46
I	F2 dinamico Limiited	47	42
J	Urban Dimension Limited	32	30
	Total	411	370

Source: Researchers field survey (2022)

Procedures for Data Collection

The structured questionnaires in this study were randomly distributed among the participant with the aid of two research assistance in order to guide the participant and also to ensure adequate response. Out of the 370 questionnaires that were distributed in the course of this study, 146(39.5%) were retrieved. Out of the 146, 9 were discarded as a result of incomplete response. Only 137(37.0%) which represent an effective response rate were used for the study.

Data Analysis

The data obtained through the questionnaire was analyzed through descriptive statistical method, which included mean scores and relative importance index. Collected data was edited for accuracy, consistency and completeness through Cronbach's alpha (α) test. Raw data was inputed into Microsoft Excel and analysed using Statistical Package for Social Sciences (SPSS version 23.0).

Results and Discussion

Level of implementation of QM in Nigerian construction projects

According to Table 2, the average mean of 2.55 and RII value of 0.60 indicate that there is moderate implementation of QM in projects in all the sampled construct firms in Abuja metropolis. The respondents of the survey exercise were of the view that QM is being practiced in some of the projects executed in the firms specifically the big ones, while it is not being practiced in many of the small projects. The findings of this study is similar to the views of Abdullahi *et al.*(2019), Abdulrahim (2016) and Okuntade (2015) on QM practice in construction projects.

Table 2: Extent of implementation of QM by construction firms in Nigeria

Implementation of QM	Mean	RII	Rank
The management ensures adequate implementation of QM by staff in every projects	2.62	0.60	5th
There are adequate provisions of requirement on QM implementation in every projects	2.89	0.67	2nd
All the staff are aware and activated to ensure quality services delivery	2.54	0.52	7h
Standard equipment and quality materials are made available for proper execution of job	2.45	0.41	8th
The firm ensures adequate supervision of staff on sites to ensure standard projects delivery	2.67	0.61	3rd
Subcontractor are giving adequate information and time to execute their job	2.56	0.54	6th
Quality services are utmost in the firm operations	2.92	0.68	1st
Assessment of customers satisfactory on project execution is done on every project	2.66	0.62	4th
Mean and RII Average	2.66	0.58	

α= 0.912 (excellent)
Source: Researchers field survey (2022)

Challenges for effective implementation of QM in Nigeria Construction Industry

Table 3 revealed that factors such as inadequate human resources, inadequate commitment of management toward the implementation, difficulty to measure results, and misinterpretation for QM requirements amongst the staff, inadequate quality production and support planning are the significant challenges of QM implementation in Nigerian construction industry. Further, lack of experience and knowledge, reluctance of staff to accept quality systems, problem in controlling subcontractors, insufficient motivation of workforce, poor documentation, various cultures of workforce and required cost and time are the less significant factors that hinder the effective implementation of QM in Nigerian construction projects. The findings of this study are synonymous with the views of Ann and Susan (2016), Pravin. & Jalindar (2015) on quality management practice in Nigerian construction industry. All the respondents agreed that the aforementioned factors are the typical form of challenges encounter for effective implementation of QM in construction projects. The findings of the questionnaire study are similar to the views of Asim. and Zarif (2013) and Tan & Abdul Rahman (2011) on the challenges of QM implementation in construction projects.

Table 3: Challenges for effective implementation of QM in Nigerian construction

Variables	**Mean**	**RII**	**Rank**
Inadequate commitment of management toward implementation	3.26	0.87	2nd
Inadequate quality production and support planning	2.89	0.79	5th
Poor documentation problem	2.62	0.61	10th
Misinterpretation for QM requirements amongst involved staff	3.05	0.81	4th
Difficulty to measure results	3.22	0.86	3rd
Required cost and time	2.56	0.53	12th
Insufficient motivation of workforce	2.69	0.63	9th
Problem in controlling subcontractors	2.75	0.67	8th
Inadequate human resources	3.99	0.91	1st
Lack of experience and knowledge	2.83	0.72	6th
Various cultures of workforce	2.59	0.58	11th
Reluctant staff to accept quality systems	2.80	0.71	7th

α= 0.975 (Excellent)
Source: Researchers field survey (2022)

Strategies for adequate implementation of quality management in Nigerian construction projects

Table 4 shows the 7 strategies proposed for effective implementation of QM as: provision of resources for quality management implementation, ensuring procedures and maintenance that are suitable for standard of quality services, adequate supervision of QM implementation in all sites in operations, ensuring efficient communication link between the various departments in every construction firm, ensuring proper auditing, regular and adequate assessment of customer requirements and satisfaction and provision of sufficient reward system for both staff and clients. Hence, the respondents ranked provision of resources for quality management implementation as the most important tool to be used to improve the quality in the construction project. Therefore, managers in construction firms need to conduct the required experiment to keep an accepted and consistent level of quality in the project (Tan and Syazwan, 2016; Abazid and Gokcekus, 2019). In addition, a training session needs to be organized for construction workers to improve their perception on provision of resources for quality management implementation, which could enable them to consider it as a crucial process as far as quality of the performance, structure and component of materials are concerned in construction projects (Mane and Patil, 2015).

Table 4: Strategies for effective Implementation of QM in Nigerian Construction Industry

Strategies	Mean	RII	Rank
Provision of resources for quality management implementation	4.51	0.95	1st
Ensuring procedures and maintenance that are suitable for standard of quality services	4.36	0.93	2nd
Adequate supervision of QM implementation in all sites in operations	4.31	0.91	3rd
Ensuring efficient communication link between the various departments in every construction of firm	4.27	0.89	4th
Ensuring proper auditing	4.15	0.85	5th
Regular and adequate assessment of Customer requirements & satisfaction	4.09	0.82	6th
Provision of sufficient reward system for both staff and clients	4.03	0.80	7th

$\alpha = 0.967$ (Excellent)

Conclusion and Recommendations

Based on the findings of the study, it can be concluded that there is partial implementation of QM in Nigerian construction industry. Some of the major factors hindering the implementation are lack of commitment of management toward the implementation, inadequate quality production and lack of support planning, inadequate employee commitment and engagement among others. Provision of resources for quality management implementation, ensuring procedures and maintenance suitable for standard of quality services, adequate supervision of QM implementation in all sites in operations are some of the important strategies that can be used for effective implementation of QM in construction projects. It is recommended that the construction firms in the study context should be enlightened on the importance of QM to the client and to construction industry. Also, adequate supervision is highly needed to ensure that construction workers carried out operation process with adequate QM implementation.

References

Abazid, A., Gokcekus, H. (2019). Application of Total Quality Management in Saudi Arabia Construction Project. *Journal of Adv Research in Dynamical & Control Systems*, 11(3), 1-11.

Abdullahi, U., Bustani, S. A., Hassan, A. &Rotimi. F. E. (2019). Assessing Quality Management Practice in Nigerian Construction Industry. *Journal*

of Construction Business and Management. 3(2). 17-25.

Abdulrahim, A. Z. (2016). Assessment of Quality Management Practices of Building Construction Firms in Abuja, Nigeria. A Dissertation Submitted to the School of Postgraduate Studies, Ahmadu Bello University, Zaria. In Partial Fulfilment for The Award of A Master Of Science Degree In Construction Management

Ann N. M. & Susan W. (2016). Drivers of Effective Project Quality Management In The Construction Industry In Nairobi County, Kenya: A Case of EPCO Builders Limited. *International Journal of Innovative Development & Policy Studies.* 4(4),1-19.

Asim, Z. & Zarif S. (2013), Implementation of Total Quality Management in Construction Industry: A Pakistan Perspective. *Journal of Management and Social Sciences*. 9(1) 24-39.

Chini, A. and Valdez, H. (2013). ISO 9000 and the U.S. Construction Industry. *Journal of Management in Engineering.* 19(2), 69-77.

Hendricks, K., &Singhal, V. (2001). Firm characteristic, total quality management and financial performance. *Journal of operations management*, 19(3), 269-285.

Irani, Z., Love, & P., Edwards, D., (2004). A seamless supply chain management model for construction, Supply chain management, An international journal, 1(9), pp. 43-56, 2004

Jimoh, R., Oyewobi, L., Waziri, M. & Isa R. (2016). Total Quality Management Practices in the Nigerian Construction Industry. *International Journal of Sustainable Construction Engineering & Technology*. 7(1), 22-23.

Krejcie, R.V. & Morgan, D.W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, 30(7), 607-610.

Lakhe, R. &Mohanty, R. (1994). Total Quality Management Concepts, Evolution and Acceptability in Developing Economies. *International Journal of Quality & Reliability Management*.11 (9), 32-56.

Leong, T. K., Zakuan, N. & Saman, M. Z. M. (2014). Review of quality management system research in construction industry. *International Journal of Productivity and Quality Management.* 13(2), 105-123.

Longtau P., Justina A. M., Majidadi S. T. & Gillian M. (2015). An Assessment of the Factors Militating Against Adherence to Quality Control in Building Construction. *International Journal of Scientific & Engineering Research*, 7(4), 121-134.

Low, S. P., & Wee, D. (2001). Improving Maintenance and Reducing Building Defects through ISO 9000. *Journal of Quality in Maintenance Engineering*. 7 (1):6-24.

Mallawaarachchi, H., &Senaratne, S., (2015). Importance of Quality for Construction Project Success. 6th international conference on structural engineering and construction management, Kandy Sri Lanka.

Mane, M. &Patil, J. (2015). Quality Management System at construction projects. Institute Engineering, PimpriProceedings of the Civil Engineering PG Conference 2015, Held at MAEER's MIT, Pune-411038, 24-25 April 2015. Advances and Research in Civil Engineering and Technology - Construction Management.

Mohammed, A. A., Vaughan, C. & Bo, X. (2017). The Requirements of Developing a Framework for Successful Adoption of Quality Management Systems in the Construction Industry. *International Journal of Economics and Management Engineering*. 11(2), 11-21.

Mosadeghrad, A. (2014) Why TQM programmes fail? A pathology approach, total quality management. *Journal of Science & Technology.* 26(2):160-187.

Noor, S. S., Seti, M. A., SitiSuhaidah, S., &Zulhabri, I., (2012). Problems And Issues On The Implementation Of Quality Management System In Construction Projects. 2012 IEEE Symposium on Business, Engineering and Industrial Applications, Malaysia.

Onungwa, I.O., Uduma-Olugu, N. N., &Igwe, J. M. (2017). Building information modelling as a Construction

Management tool in Nigeria. *WIT Transactions on the Built Environment*, *169*, 25-33.

Okuntade, T. F., (2015). Barriers and Benefits of Total Quality Management in the Nigerian Construction Industry: A review. *International Journal of Engineering Works*. 2(1), 7-13.

Onungwa, I.O., Uduma-Olugu, N.N., & Igwe, J.M. (2017). Building information modelling as a Construction

Management tool in Nigeria. *WIT Transactions on the Built Environment*, *169*, 25-33.

Pravin, P. M., Jalindar R. P., (2015). Quality management system at construction projects Proceedings of the Civil Engineering PG Conference 2015, Held at MAEER's MIT, Pune-411038, 24-25.

Qaiser, S. & Rizwana, G. (2015). Challenges to Successful Total Quality Management Implementation in Public Secondary Schools: A Case Study of Kohat District, Pakistan. *Journal of Education and Practice*. 6(1), 15-51.

Rumane, A. R. (2011). Quality management in construction projects. New York: CRC Press, Taylor & Francis Group.

Sylvia, A., &Chaminda, P., (2015). Importance of Leadership in Effective Implementation of Total quality management, In the Nigeria Construction Industry. School of Built Environment University of Salford Manchester UK.

Tan, C. K. & Syazwan, Z. K. (2016). Implementation of ISO Quality Management System in Construction Companies of Malaysia. Journal of Technology Management and Business. 3(1), 23-51.

Tan, C. K., & Abdul Rahman, H., (2011). Study of quality management in construction projects, Chinese Business Review. 1(10), 542-552.

Tricker, R. (2013). ISO 9001:2000 for Small Business. Third ed. Butterworth-Heinemann, Oxford.

Turk, A. M. (2011). ISO 9000 in Construction: An Examination of Its Application in Turkey. Building and Environment 41 (4), 501-511.

Wasiu, A. B., Aliu, A. & Modupe, A., (2012). An Assessment of Implementation Of Quality Culture in Construction. *A PhD Thesis* Department of Building, University of Lagos. www.siteware.com .br/en/methodologies/ what-is-the-pdcacycle/

Guide For Contributors and Authors

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1. Manuscripts not more than 15 pages of A4 size (including abstract, tables, figures, references and appendices), typed in double spacing and font size 12.
2. Each paper must be complied in one column; all texts should be left and right margins of an A4 paper. Decimal numbering of all sections of the articles is recommended (with exception of the reference and acknowledgment section).
3. To ensure anonymity in the pair reviewing process, articles must be structured in such a way that the title of the paper, authors names, address and affiliation are written on the first page, followed by the abstract and body of the paper in that order.
4. Each article should contain an abstracts of not more than 200 words.
5. Each article should contain between 5 to 8 keywords (avoid the use phrases).
6. The introduction should cover: the need for the study or problem statement, aim, objectives, scope and limitations and related works, while the main body should include: brief explanations on methods, algorithms, data collected, instrumentation, fieldwork, laboratory works with computed or analyzed data, results and discussions, inferences and conclusion, recommendation and implementation strategies, Language shall be in English. Grammar/Syntax and Spellings should be properly checked. Use the SI (systeme instructionale) units and symbols. Unusual characters and symbols should be explained in a list of nomenclature.
7. The editorial Board of the journal adopts the Harvard or APA format of referencing.
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